RESEARCH et al

Number 21 March 1999 • An Update for Researchers

AWWA Research Foundation

1999 projects

On January 22, the AWWARF Board of Trustees approved funding for 39 research projects to be initiated this year. Requests for proposals for 30 of the projects will be available March 15 (see page 4 for ordering information). The projects are listed below according to the goal areas outlined in AWWARF's Strategic Research Plan. Following each project description is the amount of funding available.

Protect the drinking water consumer from microbial risk

■ **Comparison of Cell Culture and Animal Infectivity (RFP 2589)** This project will compare the recovery of *Cryptosporidium parvum* oocysts by different cell lines and the inactivation of oocysts by a variety of disinfectants using cell culture and animal infectivity models. $500,000

■ **Development of a Method for Recovery of *Microsporidia* From Source and Finished Waters (RFP 2590)** Species of *Microsporidia* have been recognized as emerging pathogens and are included in the Contaminant Candidate List. This project will develop a recovery method for the organism. $250,000

■ **Development of a Molecular Method to Detect Infective Viruses (RFP 2591)** A molecular method that is selective for infective viruses will be developed and verified using cell culture as a comparison. $250,000

■ **Impact of Water Quality on the Inactivation of Pathogens (RFP 2592)** This research will evaluate the inactivation of bacteria and viruses in the presence of varying water quality parameters (e.g., turbidity, natural organic matter, pH). $250,000

■ **Inactivation of Pathogens by Innovative UV Technologies (RFP 2593)** The bacterial and viral inactivation efficiencies of several innovative ultraviolet technologies will be evaluated. $300,000

■ **Occurrence of *Legionella* in Groundwater (RFP 2594)** The occurrence and concentrations of *Legionella* in groundwater, especially in areas with elevated groundwater temperatures, will be assessed. $200,000

■ **Recovery of *Cryptosporidium* Oocysts From High Volume Water Samples (RFP 2595)** Methods will be developed for the capture and elution of low levels of oocysts from large samples of raw and finished water to yield high, reproducible recoveries, and low detection limits in water samples. $150,000

In This Issue

1999 Calendar

May 3
Deadline for mailing proposals for solicited projects with AWWARF budgets under $250,000

July 15
Deadline for mailing proposals for solicited projects with AWWARF budgets of more than $250,000

August 1
Deadline for tailored collaboration proposals

August 15
Deadline for submitting research suggestions for the 2000 agenda

■ **Structural Physiology of the *Cryptosporidium* Oocyst Wall as it Relates to Drinking Water Treatment (RFP 2596)** This project will determine the chemical composition of the *Cryptosporidium* oocyst wall and the suture that binds the plates forming the wall. How the composition of the wall and suture influence inactivation of the oocyst will be examined. $250,000

Protect the drinking water consumer from adverse health effects due to chemicals

■ **Chlorinated DBP Formation Kinetics: Back to the Basics (RFP 2597)** Fundamental laboratory experiments will examine the formation kinetics of disinfection by-products, including brominated and chlorinated compounds. $250,000

■ **Endocrine Disruptors and Pharmaceutically Active Compounds in Drinking Water—Workshop (RFP 2598)** This project will involve a literature review and expert workshop to examine the occurrence of endocrine disruptors and pharmaceutically active compounds and possible links to human exposure in drinking water. $75,000

■ **Innovative UV Technologies to Oxidize Organic and Organoleptic Chemicals (RFP 2599)** In this project, pilot-scale investigations will determine the effectiveness of various innovative UV technologies, either alone or with hydrogen peroxide, for oxidizing organic chemicals such as volatile organic compounds, pesticides, herbicides, and disinfection by-product precursors. $425,000

■ **Occurrence and Problems Associated With Trace Contaminants in Water Treatment Chemicals (RFP 2600)** This project will determine the extent of the problems, including adverse impacts on finished water quality and residuals disposal, caused by unspecified impurities in treatment chemicals. $200,000

■ **Removal of MTBE With Advanced Oxidation Processes (RFP 2601)** This project will conduct pilot-scale evaluations of advanced oxidation processes for removing MTBE, a gasoline additive, from drinking water sources. $350,000

Improve utility management to obtain optimum water quality and system reliability

■ **Identification of Needs and Functional Requirements for Critical Monitoring Sensors (RFP 2602)** This research will identify water industry needs in order to achieve robust, highly reliable, easy-to-use sensors with a low cost of ownership. Although the preliminary focus will be on turbidity, chlorine, and particle-counting technology, a range of sensors will be considered. $250,000

■ **Knowledge-Based Approach for Real-Time Water Quality Reliability Management (RFP 2603)** This project will apply emerging techniques to integrate the data and knowledge held by individuals or specific systems with decision-support information. $350,000

■ **A Strategic Assessment of the Future of Water and Wastewater Utilities (RFP 2604)** External trends (technological, organizational, demographic, political, economic, and social) affecting water and wastewater utilities will be identified and projected into the future to establish what the industry may look like in 10 to 20 years. $250,000

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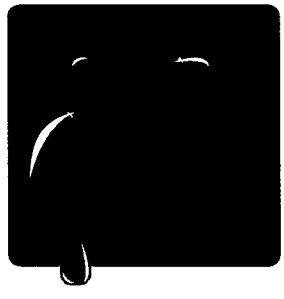

Improve utility infrastructure for the reliable delivery of high-quality drinking water to the customer's tap

■ **Cost–Benefit Analysis of Flushing (RFP 2605)** Since most utilities cannot document the monetary benefits of water main flushing programs, they have difficulty justifying them. This project will develop a methodology for determining the cost–benefit ratio of utility flushing programs. $175,000 Kiwa/AWWARF partnership.

■ **Establishing Contaminant-Specific Flushing Velocities (RFP 2606)** In this project, pilot- and full-scale flushing tests will establish recommended velocities to remove silt, sediment, tubercules, loose deposits, sand, and other contaminants and reduce disinfectant demand in distribution systems. $325,000 Kiwa/AWWARF partnership.

■ **Guidance to Estimate Comprehensive Costs of Infrastructure Failures (RFP 2607)** Methodologies to identify and estimate the total costs of a water main or appurtenance failure will be developed in order to ensure that proper and timely rehabilitation and renewal of water mains are incorporated into the capital planning process. $225,000

■ **Identify Causes and Solutions for External Corrosion on Existing Water Mains (RFP 2608)** After investigating the causes of external corrosion of water mains, this project will identify and verify economical solutions for each type of corrosion. $350,000

■ **Innovative Biofilm Prevention Strategies (RFP 2609)** Biofilms in potable water distribution systems adversely affect water quality and may complicate operational practices. This project will identify and evaluate innovative biofilm control strategies (e.g., signaling technology, new biocides). $400,000

■ **Methods to Prevent Microbiological Contamination Associated With Main Rehabilitation and Replacement (RFP 2610)** Bacteriological testing of new or rehabilitated mains frequently requires the costly installation of a temporary service. The objective of this research will be to develop sanitation and installation methods that prevent contamination and reduce the need for bacteriological testing. $100,000

■ **National Assessment of the Impact of Cross-Connections in North American Water Supplies (RFP 2611)** This project will assess the public health significance of drinking water contamination due to cross-connections in the United States. $150,000

■ **Techniques for Monitoring Structural Behavior of Piping Systems (RFP 2612)** This research will investigate techniques to continuously monitor the structural performance of piping systems (e.g., stress and strain, pipe or soil movement, soil pressure and temperature, joint integrity, and pipe cracking). $350,000

Provide science and technology to the drinking water community to improve public and consumer relations

■ **Customer Attitudes, Behavior, and the Impact of Communication Efforts (RFP 2613)** To properly design and implement effective communications, water utilities must understand customer attitudes and behavior in relation to water supply and source, demographics, and values. This project will develop communication protocols and test how they influence customer attitudes, confidence, and behavior. $300,000

Tailored Collaboration Projects

At its January meeting, the AWWARF board approved the six tailored collaboration projects listed below. The Tailored Collaboration Program provides matching funds for research proposed by AWWARF subscribers.

■ ***Bank Filtration as a Treatment Process for DBP Precursor and Microbial Contaminant Removal.*** *Louisville Water Company, Louisville, Ky.*

■ ***Consortium Benchmarking Studies.*** *Irvine Ranch Water District, Irvine, Calif.*

■ ***Enhancing Cincinnati Reactivated GAC for Protecting Against Organic Spills and Removing DBP Precursors.*** *Cincinnati Water Works, Cincinnati, Ohio*

■ ***Evaluation of UV Disinfection Systems for the Inactivation of* Cryptosporidium.** *North Shore Water Commission, Milwaukee, Wis.*

■ ***Impact of Filter Backwash Recycle on Clarification and Filtration Performance.*** *BHC Company, Bridgeport, Conn.*

■ ***Implementation Prototype Energy and Water Quality Management System.*** *Colorado Springs Utilities, Colorado Springs, Colo.*

■ **Early Warning Techniques and Communication Plans for Surface Water Taste-and-Odor Events (RFP 2614)** This project will study algal bloom indicators and their potential for production of taste-and-odor chemicals in water sources in order to develop early warning systems. $300,000

■ **Helping the Public Understand Emerging Issues in Drinking Water (RFP 2615)** This project will define proactive communication methods and tools for utilities to track emerging issues and communicate with the public about these issues, perhaps before they are fully understood or resolved. Methods to deal with customer questions and attitudes evolving from Consumer Confidence Reports and Risk Management Plans will be included. $200,000

Ensure access to, and wise use of, water resources and protection of the environment

■ **Impacts of Major Point and Non-Point Sources on Raw Water Treatability (RFP 2616)** Drinking water utilities need to understand the impacts of various point- and non-point sources of pollution on water quality and treatability. This project will assess the impact of water quality on treatment costs and compare the cost of treatment with the cost of implementing best management practices for pollution control. $300,000

■ **Occurrence Survey of Pharmaceutically Active Compounds (RFP 2617)** Recent research in Germany identified the occurrence of a wide variety of pharmaceuticals in water; however, little data exist on these compounds in U.S. waters. This project will conduct a preliminary survey of the occurrence of a limited number of pharmaceutically active compounds in U.S. source waters and treated drinking waters. $200,000

■ **Water Quality Improvements During Aquifer Storage and Recovery (RFP 2618)** A variety of beneficial reductions in water quality parameters have been observed during aquifer storage and recovery of drinking water. This research will review the literature to determine the mechanisms that may be responsible and conduct field-scale experiments to document how these mechanisms improve water quality. $250,000

How to obtain RFPs

- Visit the AWWARF website (www.awwarf.com)
- Send email (dhughston@awwarf.com or gpreston@awwarf.com)
- Write
  AWWARF RFP Desk
  6666 W. Quincy Ave.
  Denver, CO 80235
- Telephone (+1 303 347-6211 or 347-6117)

For faster service, please remember to include the number when ordering RFPs!

Timeliness Policy

The Research Foundation's policy on the timeliness of research may affect your ability to submit proposals this year. Principal investigators who are late in submitting a draft final report for any ongoing AWWARF-sponsored study, without an approved no-cost extension, are not eligible to submit proposals until the situation has been remedied. This ineligibility includes involvement as either a principal or co-principal investigator in a proposal. The deficiency must be rectified prior to submission of any new proposals. To guarantee submission eligibility, a no-cost extension must be requested in writing and approved in advance of the contractual due date for the draft final report.

In addition, if the principal investigator is more than a year late in submitting the draft final report, the entire organizational unit represented by the principal investigator is ineligible to submit proposals until the deficiency is rectified.

These same ineligibility requirements will also be enforced whenever a principal investigator is late in submitting a revised draft final report (and any subsequent iterations) or in responding to editor queries.

We encourage you to either review the entire timeliness policy on our website <www.awwarf.com/timepol.htm> or request a copy of the policy by email <dhughston@awwarf.com> or <gpreston@awwarf.com>.

Volunteers needed

AWWARF recognizes the need for fundamental and innovative drinking water research, which may not have immediate application, but may lead to breakthrough technologies in the future. Consequently, 15 percent of AWWARF's research budget is set aside for unsolicited proposals. The Unsolicited Proposal Review Committee (UPRC) reviews the research proposals, evaluating them for technical and scientific merit and making recommendations for funding to the Board of Trustees.

UPRC members are appointed by the committee chair with assistance from AWWARF staff. Members are selected according to their areas of expertise and experience in the drinking water community. Geographical and ethnic diversity are also considered.

UPRC members are required to intensively review no more than 10 unsolicited proposals and are also asked to review as many of the other proposals as is feasible. Each year, AWWARF receives 45 to 60 unsolicited proposals.

The UPRC meets the Saturday prior to the AWWA Annual Conference and Exposition (ACE®) in June. AWWARF covers additional meal and lodging expenses for UPRC members who are attending ACE and also covers travel expenses for those who are coming for the UPRC meeting only and are not planning to attend ACE.

If you are interested in serving on the UPRC, please complete the following form, attach a summary of the work you have completed in your area(s) of expertise, and fax to 303/730-0851 **no later than April 12.**

UPRC Volunteer Form

Name: _____

Title: _____

Organization: _____

Address: _____

_____

City: _____

State or Province: _____

ZIP/Postal Code: _____

Telephone: _____

FAX: _____

AWWARF Subscriber? ☐ Yes ☐ No

Have You Served on a PAC Before?
☐ Yes ☐ No

If Yes, Which One(s)? List Project Number(s)

_____

Have you ever served on the UPRC before?
☐ Yes ☐ No

Occupation:
☐ Utility ☐ Regulatory
☐ Consultant ☐ Manufacturer
☐ Academic
☐ Other (please list)_____

Please check your area(s) of expertise and attach a summary of the work you have completed in this (these) area(s). A résumé or curriculum vitae is acceptable.

☐ Chemistry ☐ Water Resources
☐ Engineering ☐ Water Treatment
☐ Biology/Ecology ☐ Distribution Systems
☐ Business ☐ Monitoring and Analysis
☐ Microbiology ☐ Management and Administration
☐ Public Health ☐ Health Effects

To assist in meeting equal opportunity goals, the following information is requested (optional):

National Origin:
☐ Caucasian ☐ American Indian/ Alaskan Native
☐ African American ☐ Asian/Pacific Islander
☐ Hispanic
☐ Other (please list)_____

AWWA
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Foundation
Advancing the Science of Water℠
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Thank you to the RAC

AWWARF would like to thank the 1998 Research Advisory Council (RAC) members for their expertise and dedication to creating a balanced agenda that is responsive to the drinking water community's research needs: Terry Gloriod (chair), Continental Water Co.; Carol Ashe, Camp Dresser & McKee; Marie-Marguerite Bourbigot, Vivendi; Edward Bouwer, the Johns Hopkins University; Gary Burlingame, Philadelphia Water Dept.; Craig Cummings, Consumers Illinois Water Co.; John Dyksen, United Water New Jersey; James Epp, Kansas City (Kans.) Board of Public Utilities; Robert Etris, Fairfax County (Va.) Water Authority; Kenneth Ficek, Carus Chemical Co.; Joseph Jacangelo, Montgomery Watson; Robert Jackson, Water & Sewerage Board of New Orleans; Gregory Kirmeyer, Economic & Engineering Services; Mark Knudson, Portland (Ore.) Water Bureau; Denise Kruger, Southern California Water Co.; Marilyn Miller, East Bay Municipal Utility District; Franklyn Pogge, Kansas City (Mo.) Water & Pollution Control Dept.; Michele Prèvost, École Polytechnique, University of Montreal; Tony Rachwal, Thames Water Utilities; Tom Ray, Brazos River Authority (Tex.); Ken Reich, Central Basin Municipal Water District (Calif.); Mic Stewart, Metropolitan Water District of Southern California; and Marylynn Yates, University of California, Riverside. We would like to especially thank our outgoing members—Bob Etris, Michele Prèvost, and Marylynn Yates—and welcome new members Christine Moe, University of North Carolina; and Dennis Clifford, University of Houston.

Non-RFP Projects

In addition to the RFP projects, the board approved "Assessing the Impact of Steady-State and Surge Recycling on Treatment Performance," which will be funded through sole-source award to Colorado State University. This project was originally funded by the Water Industry Technical Action Fund and has been reassigned to the foundation. Additionally, the board approved a $100,000 contribution to AWWA to support the design and development of a Benchmarking Clearinghouse and two applications projects: Synthesis Document on Distribution System Infrastructure and Synthesis Document on Arsenic in Drinking Water.